



## General

### Guideline Title

Best evidence statement (BEST). The use of interactive metronome in improving attention, timing, rhythm, motor planning and sequencing.

### Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BEST). The use of interactive metronome in improving attention, timing, rhythm, motor planning and sequencing. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2012 Sep 28. 6 p. [13 references]

### Guideline Status

This is the current release of the guideline.

## Recommendations

### Major Recommendations

The strength of the recommendation (strongly recommended, recommended, or no recommendation) and the quality of the evidence (1a-5b) are defined at the end of the "Major Recommendations" field.

1. It is recommended that an interactive metronome (IM) program be considered as a treatment modality to improve the following skills:
  - a. Motor control (Shaffer et al., 2001 [2b]; Koomar et al., 2001 [5b])
  - b. Timing and rhythm (Taub et al., 2007 [2b]; Koomar et al., 2001 [5b])
  - c. Visuomotor control (Casper et al., 2009 [4b])
  - d. Visual choice reaction time (Casper et al., 2009 [4b])
  - e. Attention (Shaffer et al., 2001 [2b])(Local Consensus, 2012 [5])
2. It is recommended that the IM program be completed:
  - a. 3 to 5 times per week (Taub et al., 2007 [2b]; Shaffer et al., 2001 [2b]; Bartscherer & Dole, 2005 [5a]; Interactive Metronome, 2003 [5b])
  - b. Over 15 treatment sessions (Shaffer et al., 2001 [2b]; Bartscherer & Dole, 2005 [5a]; Interactive Metronome, 2003 [5b])
  - c. With a session length of 1 hour (Taub et al., 2007 [2b]; Shaffer et al., 2001 [2b]; Bartscherer & Dole, 2005 [5a])(Local Consensus, 2012 [5])

Definitions:

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Table of Language and Definitions for Recommendation Strength

Language for Strength	Definition
It is strongly recommended that...  It is strongly recommended that... not...	When the dimensions for judging the strength of the evidence are applied, there is high support that benefits clearly outweigh risks and burdens ( <i>or visa-versa for negative recommendations</i> ).
It is recommended that...  It is recommended that... not...	When the dimensions for judging the strength of the evidence are applied, there is moderate support that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation...	

Note: See the original guideline document for the dimensions used for judging the strength of the recommendation.

## Clinical Algorithm(s)

None provided

## Scope

## Disease/Condition(s)

Decreased occupational performance related to attention, timing, rhythm, or motor and praxis skills

## Guideline Category

Management

Treatment

# Clinical Specialty

Family Practice

Pediatrics

Physical Medicine and Rehabilitation

# Intended Users

Advanced Practice Nurses

Nurses

Occupational Therapists

Physical Therapists

Physician Assistants

Physicians

# Guideline Objective(s)

To evaluate, in children ages 6 years and older demonstrating decreased occupational performance, if the Interactive Metronome (IM) program versus standard care improves attention, timing, rhythm, motor planning and/or sequencing

# Target Population

Child who:

- Presents with decreased occupational performance related to attention, timing, rhythm, or motor and praxis skills
- Is at least 6 years of age
- Is able to follow simple directions
- Is able to tolerate participating in an one-hour therapy session at least three times a week
- Is able to tolerate wearing equipment

Note: Children with atypical movement patterns and/or limited range of motion which render them incapable of approximating program exercises are excluded.

# Interventions and Practices Considered

Interactive Metronome (IM) program\*

\*The Interactive Metronome Program is a computer-based intervention tool that combines auditory feedback and movement exercises to promote improved motor planning and sequencing.

# Major Outcomes Considered

Occupational performance including attention, timing, rhythm, motor planning and/or sequencing

# Methodology

Methods Used to Collect/Select the Evidence

## Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

## Description of Methods Used to Collect/Select the Evidence

Search Strategy

- Databases: Medline, Cinahl, Cochrane Reviews, Pubmed, AOTA, AOTA, APTA's Hooked on Evidence, APTA Section of Pediatrics, Can Child, CATS, PEDro, Pediatric PT, SPD Foundation, Spiral Foundation, TRIP, IM Website
- Search Terms: Interactive Metronome, Metronome, Motor Planning, ADHD, Coordination
- Limits, Filters: English language only
- Search Dates: Date ranges from 1980-2012
- Date Search done: May 2012

## Number of Source Documents

Not stated

## Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

## Rating Scheme for the Strength of the Evidence

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
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4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

## Methods Used to Analyze the Evidence

Systematic Review

## Description of the Methods Used to Analyze the Evidence

Not stated

## Methods Used to Formulate the Recommendations

## Description of Methods Used to Formulate the Recommendations

Not stated

## Rating Scheme for the Strength of the Recommendations

Table of Language and Definitions for Recommendation Strength

Language for Strength	Definition
It is strongly recommended that...  It is strongly recommended that... not...	When the dimensions for judging the strength of the evidence are applied, there is high support that benefits clearly outweigh risks and burdens ( <i>or visa-versa for negative recommendations</i> ).
It is recommended that...  It is recommended that... not...	When the dimensions for judging the strength of the evidence are applied, there is moderate support that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation...	

Note: See the original guideline document for the dimensions used for judging the strength of the recommendation.

## Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

## Method of Guideline Validation

Peer Review

## Description of Method of Guideline Validation

This Best Evidence Statement has been reviewed against quality criteria by two independent reviewers from the Cincinnati Children's Hospital Medical Center (CCHMC) Evidence Collaboration.

## Evidence Supporting the Recommendations

## References Supporting the Recommendations

Bartscherer ML, Dole RL. Interactive metronome training for a 9-year-old boy with attention and motor coordination difficulties. *Physiother Theory Pract.* 2005 Oct-Dec;21(4):257-69. [PubMed](#)

Cosper SM, Lee GP, Peters SB, Bishop E. Interactive Metronome training in children with attention deficit and developmental coordination disorders. *Int J Rehabil Res.* 2009 Dec;32(4):331-6. [PubMed](#)

Interactive metronome: IM certified provider training and resource binder. 2003.

Koomar J, Burpee JD, DeJean V, Frick S, Kawar MJ, Fischer DM. Theoretical and clinical perspectives on the Interactive Metronome: a view from occupational therapy practice. *Am J Occup Ther.* 2001 Mar-Apr;55(2):163-6. [13 references] [PubMed](#)

Shaffer RJ, Jacokes LE, Cassily JF, Greenspan SI, Tuchman RF, Stemmer PJ Jr. Effect of interactive metronome training on children with ADHD. *Am J Occup Ther.* 2001 Mar-Apr;55(2):155-62. [PubMed](#)

Taub GE, McGrew KS, Keith TZ. Improvements in interval time tracking and effects on reading achievement. *Psychol Sch.* 2007;44(8):849-63.

## Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

## Benefits/Harms of Implementing the Guideline Recommendations

### Potential Benefits

Improved occupational performance including attention, timing, rhythm, motor planning and/or sequencing

### Potential Harms

Not stated

## Qualifying Statements

### Qualifying Statements

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

## Implementation of the Guideline

### Description of Implementation Strategy

An implementation strategy was not provided.

## Implementation Tools

Audit Criteria/Indicators

Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

## Institute of Medicine (IOM) National Healthcare Quality Report Categories

### IOM Care Need

Getting Better

### IOM Domain

Effectiveness

## Identifying Information and Availability

### Bibliographic Source(s)

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### Adaptation

Not applicable: The guideline was not adapted from another source.

### Date Released

2012 Sep 28

### Guideline Developer(s)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

### Source(s) of Funding

Cincinnati Children's Hospital Medical Center

### Guideline Committee

Not stated

## Composition of Group That Authored the Guideline

*Group/Team Members:* Kristen Brevoort, MOT, OTR/L (*Team Leader*), Division of Occupational Therapy and Physical Therapy; Amy Brennan, MS, OTR/L, Division of Occupational Therapy and Physical Therapy; Victoria McQuiddy, MHS, OTR/L, Division of Occupational Therapy and Physical Therapy

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## Financial Disclosures/Conflicts of Interest

Conflict of interest declaration forms are filed with the Cincinnati Children's Hospital Medical Center Evidence-based Decision Making (CCHMC EBDM) group. No financial or intellectual conflicts of interest were found.

## Guideline Status

This is the current release of the guideline.

## Guideline Availability

Electronic copies: Available from the [Cincinnati Children's Hospital Medical Center](#) .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at [EBDMInfo@cchmc.org](mailto:EBDMInfo@cchmc.org).

## Availability of Companion Documents

The following are available:

- Judging the strength of a recommendation. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Jan. 1 p. Available from the [Cincinnati Children's Hospital Medical Center Web site](#) .
- Grading a body of evidence to answer a clinical question. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 1 p. Available from the [Cincinnati Children's Hospital Medical Center Web site](#) .
- Table of evidence levels. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Feb 29. 1 p. Available from the [Cincinnati Children's Hospital Medical Center Web site](#) .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at [EBDMInfo@cchmc.org](mailto:EBDMInfo@cchmc.org).

In addition, suggested process or outcome measures are available in the [original guideline document](#) .

## Patient Resources

None available

## NGC Status

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